

**SUMMARY OF 2008  
MASSACHUSETTS PIPING PLOVER CENSUS**

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## SUMMARY OF 2008 MASSACHUSETTS PIPING PLOVER CENSUS

### ABSTRACT

This report summarizes data on abundance, distribution, and reproductive success of Piping Plovers (*Charadrius melodus*) in Massachusetts during the 2008 breeding season. Observers reported breeding pairs of Piping Plovers at 119 sites; 91 additional sites were surveyed at least once, but no breeding pairs were detected at them. The *Index Count* (statewide census conducted June 1-9) was 551 pairs, and the *Adjusted Total Count* (estimated total number of breeding pairs statewide for the entire season) was 566 pairs. Overall statewide productivity was 1.41 chicks fledged per pair, based on data reported for 556 of 566 pairs (98 %).

### INTRODUCTION

Piping Plovers are small, sand-colored shorebirds that nest along the Atlantic coast on sandy beaches and dunes from North Carolina to Newfoundland. The U.S. Atlantic Coast population of Piping Plovers has been federally listed as *Threatened*, pursuant to the U.S. Endangered Species Act, since 1986. The species also is listed as *Threatened* by the Massachusetts Division of Fisheries and Wildlife pursuant to Massachusetts' Endangered Species Act.

Population monitoring is an integral part of recovery efforts for Atlantic Coast Piping Plovers (U.S. Fish and Wildlife Service 1996, Hecht and Melvin 2009). It allows wildlife managers to identify limiting factors, assess effects of management actions and regulatory protection, and track progress toward recovery. In this report, we summarize data on abundance, distribution, and reproductive success of Piping Plovers breeding in Massachusetts in 2008, as reported by a coast-wide network of cooperators.

### METHODS

Monitoring and management of Piping Plovers and other coastal waterbirds in Massachusetts is carried out by a coast-wide group of cooperators that includes wildlife biologists, seasonal shorebird monitors, beach managers, researchers, and volunteers from over 30 federal agencies, local municipalities and county governments, private conservation groups, and universities. Data summarized in this report were contributed by over 80 individuals. Cooperators monitored 210 sites in Massachusetts in 2008 for the presence of breeding Piping Plovers.

#### Abundance

We measure abundance of Piping Plovers in terms of breeding pairs, defined as pairs observed with either a nest or unfledged chicks or that exhibited site tenacity and evidence of pair bonding and territoriality for at least two weeks. We report three different measures of abundance: the *Index Count*, *Unadjusted Total Count*, and *Adjusted Total Count*. The *Index Count*, as reported since 1990, is the total number of pairs tallied statewide each year during a 9-day count period in late May and early June,

standardized each year for the entire Atlantic Coast. In 2008, the *Index Count* period was June 1-9. The objective of the *Index Count* is to estimate population size with a minimum of double-counting of pairs that may move between or within sites, thereby providing an index to population trends that may be more precise than counts based on observations made over the entire breeding season. The *Index Count* likely minimizes double-counting because it occurs over such a short time period. However, it probably underestimates actual number of breeding pairs because it does not include pairs that leave the state before, arrive after, or are present but simply go undetected during the 9-day *Index Count* period.

Since 2000, we have reported two different “Total Counts”. The *Unadjusted Total Count* is a tally of the total number of pairs reported for all sites over the course of the entire nesting season, with limited effort made to adjust for any pairs that may have been double-counted if they nested unsuccessfully at one location and then re-nested at another. We then derive an *Adjusted Total Count* by calculating the average of the *Index Count* and the *Unadjusted Total Count*, rounded to the nearest whole number of pairs.

The *Unadjusted Total Count* likely overestimates the actual population by double-counting pairs that establish nesting territories at more than one location in a given year. Without color-banded birds, however, it is impossible to accurately determine whether late-nesting pairs may have nested earlier at a different site, or simply did not arrive or begin breeding activities until June. It is too time-consuming, subjective, and, we suspect, inaccurate to try and adjust the *Total Count* of pairs each year by not tallying late-nesting pairs (*i.e.*, pairs reported as “new” pairs that nested after the first week in June), based on the assumption that these birds were probably already counted earlier in the season. We believe that the *Adjusted Total Count* is the most accurate estimate of the actual number of breeding pairs in Massachusetts because it falls midway between the *Index Count* and *Unadjusted Total Count*, which we suspect slightly underestimate and overestimate, respectively, the actual breeding population.

### **Reproductive success**

The primary measure of reproductive success that we report is *Productivity*, measured as number of chicks fledged per pair. The denominator of this ratio is the number of breeding pairs for which fledging data were reported; this includes not only pairs that successfully fledged chicks, but also pairs that cooperators believed did not nest, pairs that nested unsuccessfully (eggs did not survive to hatch), and pairs whose chicks failed to fledge. Since 2000, we have reported two different *Number of pairs with fledge data*. As with counts of breeding pairs, estimates of the number of pairs for which fledging data are reported will be biased if any double-counting of pairs occurs. Double-counting will overestimate the number of pairs in the denominator of the productivity ratio, and thereby will underestimate actual productivity. To reduce the potential bias associated with double-counting, we multiplied the *Unadjusted number of pairs with fledge data* (a tally of the total number of pairs with fledge data reported for all sites, with limited effort made to adjust for pairs that may have been double-counted) by the ratio of the *Adjusted Total Count* to the *Unadjusted Total Count* to arrive at the *Adjusted number of pairs with fledge data*.

### **Data reporting and quality control**

All data were reported by cooperators who filled out a standard Massachusetts Piping Plover Census Form for each site monitored. This form requested data on number of breeding pairs (*Index Count* and *Total Count*); frequency of site visits; design(s) and installation dates of predator exclosures; dates of nest discovery, completion, and hatching or failure; number of eggs on the date the nest was discovered; total numbers of eggs laid, eggs hatched, and chicks fledged; reasons for egg and chick loss, if determined; and general comments and management needs. Maps of sites showing the locations of all nests were submitted with census forms. If necessary after reviewing census forms, we contacted cooperators to obtain missing or incomplete data, resolve inconsistencies, and clarify ambiguities.

## RESULTS

Observers reported breeding Piping Plovers at 119 sites in Massachusetts in 2008. An additional 91 sites were surveyed one or more times during May and June, but no breeding pairs were detected at them (Table 1).

The *Adjusted Total Count* in 2008 was 566 pairs (Table 1). The *Index Count* in 2008 was 551 pairs, or 97% of the *Adjusted Total Count*. Overall productivity in 2008 was 1.41 chicks fledged per pair, based on data from 556 of 566 ( 98%) pairs (Table 1). By comparison, in 2007 the *Index Count* was 550 pairs, the *Adjusted Total Count* was 558 pairs, and the overall productivity was 1.25 chicks fledged per pair (Melvin 2008).

Two regions harbored 63 % of the total breeding pairs in the state in 2008: the Lower Cape (38.5 %) and the Upper Cape (24.3 %) (Table 1). Individual sites with the largest numbers of pairs were South Beach, Chatham (48 pairs), Sandy Neck, Barnstable (35 pairs), South Monomoy Island, Chatham (26 pairs), Crane Beach, Ipswich (22 pairs), Nauset Spit, Orleans (22 pairs), Coast Guard Beach, Eastham (17 pairs), Dead Neck-Sampson's Island, Barnstable (16 pairs), and Plymouth Beach, Plymouth (16 pairs). Although the 16 largest sites, i.e. those with  $\geq 10$  pairs, supported 51% of all pairs in the state, the 73 smallest sites (1-3 pairs) were also important, collectively accounting for 19.6 % of the total pairs.

## ACKNOWLEDGEMENTS

We extend our sincere thanks to the many biologists, seasonal shorebird monitors, beach managers, landowners, and volunteers who participated in conservation efforts on behalf of Piping Plovers and other coastal waterbirds in Massachusetts in 2008. We also thank the more than 30 state and federal agencies, local municipalities and county governments, private conservation groups, and universities that supported their efforts. We especially thank all the individuals who participated in population monitoring and submitted the data that are summarized in this report.

## LITERATURE CITED

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- Melvin, S. M. 2008. Summary of 2007 Massachusetts Piping Plover census data. Massachusetts Division of Fisheries and Wildlife. Westborough, MA. 18 pp.

Table 1. Abundance, distribution, and productivity of Piping Plovers in Massachusetts, 2008.

Location	<u>Number of pairs</u>		No. chicks fledged <sup>c</sup>	No. pairs with fledge data <sup>c</sup>	Source <sup>d</sup>
	Index Count <sup>a</sup>	Total Count <sup>b</sup>			
<b>NORTH SHORE</b>					
North Salisbury Beach, Salisbury <sup>e</sup>	0	0	0	0	DCR
South Salisbury Beach, Salisbury <sup>e</sup>	0	0 <sup>f</sup>	0	0	DCR
Plum Island town beaches, Newburyport/Newbury	1 <sup>g</sup>	1 <sup>g</sup>	0	1	USFWS
Parker River NWR, Newbury/Rowley	7	9	6	9	USFWS
Sandy Point State Res., Ipswich	5	5	7	5	USFWS
Crane Beach, Ipswich	22	22	33	22	TTOR
Coffin's Beach, Gloucester	0 <sup>h</sup>	0 <sup>h</sup>	0	0	MAS
Wingaersheek Beach, Gloucester	0	nd <sup>i</sup>	nd	0	MAS
Good Harbor Beach, Gloucester	nd	nd	nd	nd	nd
Revere Beach, Revere	2	2	3	2	MAS, NEA
Winthrop Beach, Winthrop	2	2	6	2	MAS, NEA
Yirrell Beach, Winthrop	1	1	0	1	MAS, NEA
<b>SOUTH SHORE</b>					
The Glades, Scituate	nd	1	2	1	MAS
Third Cliff, Scituate	1 <sup>j</sup>	1 <sup>j</sup>	2	1	MAS
Fourth Cliff, Scituate	0	0	0	0	MAS
Humarock, Scituate	1	1	1	1	MAS
Rexhame Beach, Marshfield	0	0	0	0	MAS
Duxbury Beach, Duxbury/Plymouth	8	8	9	8	MAS, Duxbury
Saquish, Plymouth <sup>k</sup>	0 <sup>k</sup>	nd <sup>k</sup>	nd	0	MAS
Plymouth Beach, Plymouth	15	16	20	16	Plymouth
Ellisville, Plymouth <sup>l</sup>	3	3	4	3	FEM, MAS

Location	Number of pairs		No. chicks fledged <sup>c</sup>	No. pairs with fledge data <sup>c</sup>	Source <sup>d</sup>
	Index Count <sup>a</sup>	Total Count <sup>b</sup>			
Sagamore Beach, Bourne, Sandwich, and Plymouth	2 <sup>m</sup>	3 <sup>m,n</sup>	4	3 <sup>n</sup>	MAS
Scusset Beach State Res., Sandwich	1	2 <sup>n</sup>	0	2 <sup>n</sup>	MAS
<b>UPPER CAPE</b>					
Mashnee Dike, Bourne	0	1	nd	0	ACOE, DFW
Bassetts Island, Bourne	nd	nd	nd	nd	nd
Old Silver Beach, Falmouth	0	nd	nd	0	MAS
Little Island Beach, Falmouth	nd	nd	nd	nd	nd
Chappaquoit Beach, Falmouth	nd	nd	nd	nd	nd
Black Beach, Falmouth	0	0 <sup>o</sup>	0	0	MAS
Sippewisset, Falmouth	1	2	4	2	MAS
Woodneck Beach, Falmouth	0	nd	nd	0	MAS
Acapesket Beach, Falmouth	0	nd	nd	0	MAS
Menauhant Yacht Club Beach, Falmouth	1	1	1	1	WBNRR
Washburn Island, Falmouth	3	3	8	3	WBNERR
South Cape Beach, Mashpee	1	1	1	1	WBNERR
New Seabury, Mashpee	1	2	1	2	WBNERR
Rock Landing/Maushop Village, Mashpee	0	nd	nd	0	MAS
Popponeset Spit, Mashpee	4	5	0	5	MAS
Rushy Marsh Pond Beach, Barnstable	nd	nd <sup>p</sup>	nd	nd	DFW
Town Neck Beach, Sandwich	7	8 <sup>q</sup>	15	8 <sup>q</sup>	MAS
Springhill Beach, Sandwich	12	12 <sup>q</sup>	27	12 <sup>q</sup>	MAS
East Sandwich Beach, Sandwich	7	7	22	7	MAS
Scorton (Neck) Creek, Sandwich	6	6	17	6	MAS
Scorton Shores, Sandwich <sup>r</sup>	5 <sup>s</sup>	4 <sup>s</sup>	2	4	MAS
Sandy Neck, Barnstable	32 <sup>s</sup>	35 <sup>s</sup>	43	35	Barnstable

Location	<u>Number of pairs</u>		No. chicks fledged <sup>c</sup>	No. pairs with fledge data <sup>c</sup>	Source <sup>d</sup>
	Index Count <sup>a</sup>	Total Count <sup>b</sup>			
Sampson's Is.-Dead Neck, Barnstable	14	16	17	16	MAS
Bone Hill Road, Barnstable	0	0 <sup>t</sup>	0	0	MAS
Dowses Beach, Barnstable	2	2	6	2	MAS
Long Beach, Barnstable	5	5	6	5	MAS
Craigville Beach, Barnstable	1	1	4	1	MAS
Memorial Beach, Barnstable	0	0	0	0	MAS
Squaw Island, Barnstable	5	6	3	6	MAS
Squaw Is. Road (causeway), Barnstable	1	1	0	1	MAS
Sea St./ Keyes Beach, Barnstable	0	nd	nd	0	MAS
Kalmus Park Beach, Barnstable	5	7	1	7	MAS
Fortes Beach, Barnstable	0	nd	nd	0	MAS
Colonial Acres-Standish Way, Barnstable	0	0	0	0	MAS
Gray's Beach, Yarmouth	0 <sup>u</sup>	0 <sup>u</sup>	0	0	MAS
Seagull Beach/Radio City, Yarmouth	2	2	7	2	MAS
Great Island, Yarmouth	1 <sup>v</sup>	1 <sup>v</sup>	0	1	MAS
Bass River Beach, Yarmouth	0	0	0	0	MAS
West Dennis Beach, Dennis	7	7	13	7	MAS, Dennis
South Village Road Beach, Dennis	0	nd	nd	0	MAS, Dennis
Miramar Beach (Swan River), Dennis	2	2	4	2	MAS, Dennis
Haigis Beach, Dennis	0	nd	nd	0	MAS, Dennis
Glendon Road Beach, Dennis	0	nd	nd	0	MAS, Dennis
Depot St., Inman St. beaches, Dennis	0	nd	nd	0	MAS, Dennis
South Village Beach, Dennis	0	nd	nd	0	MAS, Dennis
Chapin Beach, Dennis	3	3	0	3	MAS, Dennis
Mayflower Beach, Dennis	0	0	0	0	MAS, Dennis
Howes St./Corporation Beach, Dennis	0	0	0	0	MAS, Dennis

Location	<u>Number of pairs</u>		No. chicks fledged <sup>c</sup>	No. pairs with fledge data <sup>c</sup>	Source <sup>d</sup>
	Index Count <sup>a</sup>	Total Count <sup>b</sup>			
Cold Storage Beach to Sea St., Dennis	0	0	0	0	MAS, Dennis
Sesuit Harbor Beach, Dennis	0	nd	nd	0	MAS, Dennis
Coles Pond / Crowes Pasture / Quivett Neck, Dennis	1	1	0	1	MAS, Dennis
Wings Island, Brewster	0	0	0	0	MAS
Paine's Creek, Brewster	0	nd	nd	0	MAS
Robbins Hill Beach, Brewster	0	nd	nd	0	MAS
Saint's Landing, Brewster	0	nd	nd	0	MAS
Breakwater Landing , Brewster	0	nd	nd	0	MAS
Point of Rocks, Brewster	0	nd	nd	0	MAS
Ellis Landing, Brewster	0	nd	nd	0	MAS
Linell Landing Beach, Brewster	0	nd	nd	0	MAS
Crosby Landing Beach, Brewster	3	3	6	3	MAS
Mants Landing, Brewster	0	nd	nd	0	MAS
Grey Neck Rd. Beach, Harwich	0	nd	nd	0	MAS
Allens Harbor, Harwich	0	nd	nd	0	MAS
Belmont Condos, Harwich	1	1	2	1	MAS
Bank St./Merkel Beach/Wychmere, Harwichport	2	4	7	4	MAS
Saquatucket Bluffs, Harwich	nd	nd	nd	nd	nd
Red River Beach, Harwich	0	nd	nd	0	MAS
<b>LOWER CAPE</b>					
Pleasant St. Beach, Chatham	1	1	4	1	MAS
Forest Beach, Chatham	2	2	7	2	MAS
Cockle Cove, Chatham	0	0	0	0	MAS
Ridgevale Beach, Chatham	2	2	5	2	MAS
Harding Shores, Chatham	0	0	0	0	MAS



Location	<u>Number of pairs</u>		No. chicks fledged <sup>c</sup>	No. pairs with fledge data <sup>c</sup>	Source <sup>d</sup>
	Index Count <sup>a</sup>	Total Count <sup>b</sup>			
Harding Beach, Chatham	4	4	11	4	MAS
Harding Beach Point, Chatham <sup>w</sup>	0	nd	nd	0	MAS
North Monomoy Island, Chatham	1	1	0	1	USFWS
Minimoy Island, Chatham <sup>x</sup>	0	0	0	0	USFWS
South Monomoy Island, Chatham	24	26	27	26	USFWS
South Beach, Chatham	47	48	37	48	MAS
Morris Island dredge spoil, Chatham	0	0	0	0	MAS
Tern Island, Chatham	0	0 <sup>y</sup>	0	0	MAS
Claflin Landing/ Chatham Bars Inn, Chatham	0	0	0	0	MAS
North Beach Island, Chatham	10	12.5 <sup>z</sup>	6	12.5 <sup>z</sup>	Chatham
North (Nauset) Beach, Chatham	0	0	0	0	Chatham
North (Nauset) Beach, Orleans	5	5	10	5	Orleans
Nauset Spit (Heights), Orleans	21	22 <sup>aa</sup>	42	22 <sup>aa</sup>	Orleans
New Island, Orleans/Eastham	0	1 <sup>aa</sup>	0	1 <sup>aa</sup>	NPS, Orleans
Skaket Beach, Orleans	1	1	4	1	Orleans
Rock Creek (north side), Orleans	nd	nd	nd	nd	nd
First Encounter Beach, Eastham	nd	nd <sup>bb</sup>	nd	nd	nd
So. Sunken Meadow Spit, Eastham	5	5	8	5	MAS
Coast Guard Beach, Eastham	15	17	19	17	NPS
Nauset Light Beach, Eastham	0	0	0	0	NPS
Marconi Beach and Station, Wellfleet	5	5	14	5	NPS
Lecount Hollow, Wellfleet	1	1	0	1	NPS
White Crest Beach, Wellfleet	1	1	0	1	NPS
Cahoon Hollow, Wellfleet	0	0	0	0	NPS
Lieutenant Island, Wellfleet	2	2	1	2	MAS
Indian Neck/Field Point, Wellfleet	1	1	4	1	MAS, DFW

Location	Number of pairs		No. chicks fledged <sup>c</sup>	No. pairs with fledge data <sup>c</sup>	Source <sup>d</sup>
	Index Count <sup>a</sup>	Total Count <sup>b</sup>			
Jeremy Point/Great Island, Wellfleet	10	10	24	10	NPS
Duck Harbor/Bound Brook, Wellfleet/ Truro <sup>cc</sup>	9	9	21	9	NPS
Ryder Beach, Truro	1	1	0	1	NPS
Pamet Harbor-South (Fisher's Beach), Truro	2	3 <sup>dd</sup>	4	3	MAS
Pamet Harbor-North (Corn Hill Beach), Truro	4	4 <sup>dd</sup>	10	4	MAS
Pond Village Beach, Truro	nd	nd	nd	nd	nd
Pilgrim Beach/Beach Point, Truro	2	2	4	2	MAS
Newcomb Hollow, Wellfleet/ Truro	1	1	0	1	NPS
Ballston Beach, Truro	1	1	0	1	NPS
Longnook Beach, Truro	0	0	0	0	NPS
High Head/Head of the Meadow, Truro	6	6	10	6	NPS
Race Point-South Beach, Provincetown/Truro	13	13	33	13	NPS
Race Point-North Beach, Provincetown	11	11	29	11	NPS
Long Point/Wood End, Provincetown	10	10	8	10	NPS
Herring Cove Beach, Provincetown <sup>ee</sup>	1	1	0	1	NPS
<b>BRISTOL COUNTY</b>					
Stony Point Dike, Wareham	0	0	0	0	ACOE, DFW
Long Beach Point, Wareham	nd	nd	nd	nd	nd
Little Harbor Beach, Wareham	1	1	4	1	MAS
Strawberry Point, Mattapoisett	nd	nd	nd	nd	nd
West Island, Fairhaven	3	3	8	3	LCES
Winsegansett Heights, Fairhaven	0	0	0	0	LCES
Round Hill Beach, Dartmouth	0	0	0	0	MAS
Salters Pond, Dartmouth	2	2	2	2	MAS

Location	<u>Number of pairs</u>		No. chicks fledged <sup>c</sup>	No. pairs with fledge data <sup>c</sup>	Source <sup>d</sup>
	Index Count <sup>a</sup>	Total Count <sup>b</sup>			
Demarest Lloyd State Park, Dartmouth	2	2	0	2	LCES
Little Beach/Barney's Joy, Dartmouth	14	14	6	14	MAS
Gooseberry Neck, Westport	1	1	0	1	LCES
Horseneck Beach, Westport	12	12	11	12	LCES, MAS
Acoaxet, Westport	0	0	0	0	TNC-RI
Cockeast Pond, Westport	0 <sup>ff</sup>	1 <sup>ff</sup>	0	1 <sup>ff</sup>	TNC-RI
Richmond Pond, Westport	2 <sup>ff</sup>	2 <sup>ff</sup>	2	2 <sup>ff</sup>	TNC-RI
Bay Point, Swansea	0	0	0	0	A. Waring
<b>ELIZABETH ISLANDS</b>					
Naushon Island	1 <sup>gg</sup>	1 <sup>gg</sup>	nd	0	DFW
Pasque Island-Robinson's Hole	1 <sup>hh</sup>	1 <sup>hh</sup>	nd	0	DFW
Pasque Island-Cobbly	nd <sup>hh</sup>	nd <sup>hh</sup>	nd	0	nd
Pasque Island-Quicks Hole	0 <sup>hh</sup>	nd <sup>hh</sup>	nd	0	DFW
Nashawena Island-Quicks Hole	4 <sup>ii</sup>	4 <sup>ii</sup>	nd	0	DFW
Nashawena Island-Canapitsit	0	nd	nd	0	DFW
Cuttyhunk Island, Gosnold	0 <sup>jj</sup>	nd	nd	0	DFW
Penikese Island, Gosnold	0	0	0	0	DFW
Ram Island, Mattapoisett	0	0	0	0	DFW
<b>MARTHA'S VINEYARD</b>					
Eastville Point Beach, Oak Bluffs	0	0	0	0	MAS
Harthaven, Oak Bluffs	0	1 <sup>kk</sup>	1	1 <sup>kk</sup>	MAS
Sylvia State Beach, Edgartown	3	3 <sup>kk</sup>	1	3 <sup>kk</sup>	MAS
Cow Bay, Edgartown	0	nd	nd	0	MAS
Eel Pond / Little Beach / Lighthouse Beach, Edgartown	0	1	0	1	MAS

Location	<u>Number of pairs</u>		No. chicks fledged <sup>c</sup>	No. pairs with fledge data <sup>c</sup>	Source <sup>d</sup>
	Index Count <sup>a</sup>	Total Count <sup>b</sup>			
Chappaquiddick Point Beach, Chappaquiddick	0	0	0	0	MVLB
Cape Pogue Elbow / The Narrows, Chappaquiddick	4	4	4	4	TTOR
Little Neck, Chappaquiddick	0	0	0	0	TTOR
Arruda's Point / The Jetties, Chappaquiddick	0	1	0	1	TTOR
Leland / East Beaches / Poucha Pond, Chappaquiddick	4	4	6	4	TTOR, MVLB
Wasque, Chappaquiddick	1	1	2	1	TTOR
Norton Point Beach, Edgartown	4	4	0	4	TTOR
South Beach, Edgartown	0	nd	nd	0	MAS
Jobs Neck / Crackatuxet Pond, Edgartown	nd	nd	nd	nd	MAS
Edgartown Great Pond, Edgartown	3	3	0	3	MAS, MVLB
Oyster/Paqua Ponds, Edgartown	0	nd	nd	0	MAS
Watcha Pond, W. Tisbury	1	1	nd	0	MAS
Tisbury Great Pond/Black Point Pond/Quansoo/Long Point, Chilmark <sup>ll</sup>	1	2	1	2	MAS, MVLB
Chilmark Pond, Chilmark	1	1	3	1	MAS, MVLB
Lucy Vincent Beach, Chilmark	0	0	0	0	MAS
Stonewall Beach, Chilmark	0	0	0	0	MAS
Squibnocket Beach, Chilmark	2	2	0	2	D. Swanson
Long Beach, Aquinnah	0	nd	nd	0	MAS
Moshup Trail Beach/Philbin Beach/Moshup Beach Overlook, Aquinnah	1	1	0	1	MAS, MVLB
Dogfish Bar, Aquinnah	6	6	11	6	MAS, L. Johnson
Lobsterville Beach, Aquinnah	2	2	2	2	MAS
Menemsha Beach, Chilmark	0	nd	nd	0	MAS
Lambert's Cove, West Tisbury	0	nd	nd	0	MAS
Cedar Tree Neck, W. Tisbury	0	nd	nd	0	MAS
Great Rock Bight Preserve, Chilmark	0	0	0	0	MVLB

Location	<u>Number of pairs</u>		No. chicks fledged <sup>c</sup>	No. pairs with fledge data <sup>c</sup>	Source <sup>d</sup>
	Index Count <sup>a</sup>	Total Count <sup>b</sup>			
Sepiessa Point Reservation, West Tisbury	0	0	0	0	MVLB
Tashmoo, Tisbury	3	3	5	3	MAS
Wilfred's Pond and Mink Meadows Beach, Tisbury	1	1	3	1	MAS, MVLB
Northern Pines Shores, Tisbury	nd	nd	nd	nd	nd
Nomans Land	0	0	0	0	USFWS
<b>NANTUCKET</b>					
Great Point	0	0	0	0	TTOR
The Galls	1	1	1	1	TTOR
Coskata-West Beach <sup>mm</sup>	2	2	3	2	TTOR
Coatue	7	7	7	7	NCF
Coskata-East Beach <sup>nn</sup>	0	0	0	0	TTOR
Coskata Inlet/The Haulover <sup>nn</sup>	0	0	0	0	NCF
Wauwinet	2 <sup>oo</sup>	2 <sup>oo</sup>	0	2	MAS
Squam Pond	2	2	3	2	MAS, NCF
Quidnet/Sesachacha Pond	2	2	0	2	MAS
Low Beach/Tom Nevers <sup>pp</sup>	0	0	0	0	Nantucket
Surfside	0	0	0	0	Nantucket
Hummock Pond	1	1	0	1	NCF
Esther Is. / Smith Point, Nantucket <sup>qq</sup>	4	4	11	4	Nantucket
Eel Point	9	9	3	9	NCF
Dionis Beach	0	0	0	0	Nantucket
Jetties Beach	3	3	6	3	Nantucket
Quaise Point	0	0	0	0	NCF
Ram Island (Polpis Harbor)	0	0	0	0	NCF

Location	<u>Number of pairs</u>		No. chicks fledged <sup>c</sup>	No. pairs with fledge data <sup>c</sup>	Source <sup>d</sup>
	Index Count <sup>a</sup>	Total Count <sup>b</sup>			
Long Pond	0	0	0	0	NCF
Madaket Beach	1	1	nd	0	MAS, Nantucket
Tuckernuck Island	6	6	11	6	TLT
Muskeget Island	6	6	12	6	CSI
<b>UNADJUSTED TOTALS</b>	<b>551</b>	<b>582 <sup>rr</sup></b>	<b>785</b>	<b>572 <sup>ss</sup></b>	
<b>ADJUSTED TOTALS</b>	<b>-</b>	<b>566 <sup>tt</sup></b>	<b>-</b>	<b>556 <sup>uu</sup></b>	

<sup>a</sup> *Index Count* = number of pairs counted between June 1-9, 2008, the standardized *Index Count* period for the Atlantic Coast population.

<sup>b</sup> *Total Count* = total number of territorial or breeding pairs present at a site for at least 2 weeks during the breeding season.

<sup>c</sup> *Chicks fledged* are defined as chicks  $\geq 25$  days of age or observed in flight, whichever occurs first. *Number of pairs with fledge data* includes all pairs for which number of chicks fledged was determined; this includes not only pairs that successfully fledged chicks, but also pairs for which no nests were found, pairs that nested unsuccessfully, and pairs whose chicks failed to fledge.

<sup>d</sup> Source = the primary source that provided monitoring data: ACOE = U.S. Army Corps of Engineers, Barnstable = Town of Barnstable, Chatham = Town of Chatham, CSI = College of Staten Island, DCR = Massachusetts Department of Conservation and Recreation, Dennis = Town of Dennis, DFW = Massachusetts Division of Fisheries and Wildlife, Duxbury = Town of Duxbury, FEM = Friends of Ellisville Marsh, LCES = Lloyd Center for Environmental Studies, MAS = Massachusetts Audubon Society, MVLB = Martha's Vineyard Land Bank, Nantucket = Town of Nantucket, NCF = Nantucket Conservation Foundation, NEA = New England Aquarium, NPS = National Park Service, Orleans = Town of Orleans, Plymouth = Town of Plymouth, TLT = Tuckernuck Land Trust, TNC-RI = The Nature Conservancy - Rhode Island Chapter, TTOR = The Trustees of Reservations, USFWS = U.S. Fish and Wildlife Service, WBNERR = Waquoit Bay National Estuarine Research Reserve.

<sup>e</sup> For purposes of this compilation, North Salisbury Beach is defined as the length of beach from the Massachusetts/New Hampshire border south to the center of the town of Salisbury Beach; South Salisbury Beach is the length of beach from the center of the town of Salisbury Beach south to the Merrimack River.

<sup>f</sup> At South Salisbury Beach, a single adult was occasionally observed feeding in May 2008.

<sup>g</sup> At Plum Island town beaches, in addition to the single pair reported, a single adult was observed and a scrape was found near the 33rd St. access between May 11 and June 10.



<sup>h</sup> At Coffins Beach, Gloucester, a territorial pair of plovers was present on May 9 but was not seen on May 14. One plover was observed on May 22. There were no observations during June to indicate the presence of a breeding pair. Five adults and 4 fledged chicks were observed in late July, but were presumably from Crane Beach or another site.

<sup>i</sup> nd = no data available

<sup>j</sup> At Third Cliff, Scituate, reduced monitoring effort may have underestimated the number of pairs present.

<sup>k</sup> Saquish, Plymouth was reported as part of Duxbury Beach prior to 2001. MassAudubon staff surveyed this site once in 2008, on June 8; a Piping Plover was heard but not seen, and Piping Plover tracks were observed. In January 2009, a Saquish resident stated that a pair of Piping Plovers had nested there in 2008, but provided no supporting data.

<sup>l</sup> Ellisville includes both Ellisville State Park and the private beach along the south side of Ellisville Harbor.

<sup>m</sup> At Sagamore Beach, in addition to pairs 1 and 3 that were present during the Index Count period, a male with scrapes (possibly the male from pair 2 that lost their nest on May 15-16) was observed on June 6.

<sup>n</sup> At Scusset Beach in Sandwich, a territorial pair of plovers that was present from April 16 to May 2 was believed to have shifted north to Sagamore Beach and nested. This pair is included in *Total Count* and *Number of pairs with fledge data* for both sites, but is tallied only once in state totals.

<sup>o</sup> At Black Beach, Falmouth, although 1 and 2 plovers were seen on multiple occasions exhibiting territorial behavior, no nest was found; these were believed to be birds from across the channel at Sippewisset.

<sup>p</sup> At Rushy Marsh Pond Beach, Cotuit, no plovers were observed during a survey on May 7, 2008. Tracks indicated heavy human and dog presence along most of this narrow beach. However, some physically suitable nesting habitat was present, especially at the northern end, and more suitable habitat will likely be created if storm tides overwash the beach into the marsh behind and erode the low dunes.

<sup>q</sup> At Town Neck Beach, Sandwich, pair # 7 whose 1-egg nest was abandoned during the period May 26-29, was believed to have relocated to Springhill Beach and re-nested as pair #12 (nest with 4 eggs found on 12 June and hatched on 24 June). This pair is included in *Total Count* and *Number of pairs with fledge data* for both sites, but is tallied only once in state totals.

<sup>r</sup> Scorton Shores includes the Sandwich portion of Bodfish Park.

<sup>s</sup> At Sandy Neck, Barnstable, pair 1 that lost their nest on May 23 was believed to have shifted slightly west to Scorton Shores where they were present during the Index Count but did not nest and were observed for < 2 weeks. Accordingly, they are tallied in the *Total Count* for Sandy Neck but not Scorton Shores, and in the *Index Count* for Scorton Shores but not Sandy Neck.

<sup>t</sup> Bone Hill Road, Barnstable, was regularly monitored throughout the breeding season. No breeding plovers were observed, however foraging birds were observed in the area.

- <sup>u</sup> Grays Beach, Yarmouth, was infrequently monitored, so it is possible that a pair was present and nested unsuccessfully but went undetected. Scrapes were found in multiple locations on May 1, plover tracks were observed on May 28, and a single territorial plover was observed on June 9.
- <sup>v</sup> At Great Island, Yarmouth, 1 pair was present throughout the season at Smith Point; monitors occasionally observed scrapes, but no nest was found. A single territorial bird with scrapes was observed on June 3 on the Causeway (Children's) Beach.
- <sup>w</sup> Harding Beach Point, Chatham, is also referred to as "Morris Island Dike".
- <sup>x</sup> "Minimoy" Island, Chatham, is a small, accreting island that has emerged during the past decade and lies west of the north end of South Monomoy Island, Chatham.
- <sup>y</sup> At Tern Island, Chatham, a single Piping Plover was observed feeding on 3 occasions, but did not exhibit territorial behavior; no pairs were observed.
- <sup>z</sup> At North Beach Island, Chatham, 1 Piping Plover was killed by a Peregrine Falcon on May 5, prior to any nest being found. The mate of this bird was believed to have repaired and nested.
- <sup>aa</sup> At Nauset Spit, Orleans, pair # 16 is believed to have renested on New Island. This pair is included in the Index Count for Nauset Spit. It is included in *Total Count* and *Number of pairs with fledge data* for both sites, but only once in state totals.
- <sup>bb</sup> At First Encounter Beach, Eastham, a volunteer reported seeing a pair of Piping Plovers with a scrape on May 15, but did not see the birds again. The site was not regularly monitored.
- <sup>cc</sup> Data for Duck Harbor and Bound Brook in Wellfleet and Truro were reported as part of Jeremy Point / Great Island prior to 2001.
- <sup>dd</sup> At Corn Hill Beach, Truro, an apparent fifth pair was observed from May 16 until about May 27 from near the beach entrance south to near the north end of the original symbolic fencing. However, these birds are not included in the Index Count because they were not observed after May 27 and not in the Total Count because they were not determined to have been present for at least 2 weeks. This was possibly pair # 3 from South Pamet (Fishers Beach), which lost their nest to crow predation on May 15.
- <sup>ee</sup> A pair of plovers nested at Herring Cove Beach, Provincetown, in 2006 and 2007 and sporadically in earlier years. However, prior to 2007 any plovers observed there were tallied as part of the Wood End / Long Point site.
- <sup>ff</sup> At Cockeast Pond, Westport, a pair observed in April and May (no nest found) was believed to have moved to Richmond Pond by June 1, where it subsequently nested. This pair is tallied in the *Index Count* for Richmond Pond but not for Cockeast Pond. It is included in *Total Count* and *Number of pairs with fledge data* for both sites, but is tallied only once in state totals.
- <sup>gg</sup> Traditional and potential nesting beaches on Naushon Island were surveyed on June 13, 2008. A pair of Piping Plovers with a 4-egg nest was found on the beach at Tarpaulin Cove. No plovers were detected at Crescent Beach or Kettle Cove Beach (both sites walked) or at West End Beach (scanned from boat approx. 75 yards offshore).



<sup>hh</sup> At Pasque Island, potential nesting beaches were surveyed on June 13, 2008. A pair of plovers with 2 chicks estimated to be  $\geq 2$  weeks-old were at Robinson's Hole. No plovers were found at Quicks Hole-Pasque. Pasque-Cobbly was not censused; habitat was deemed too cobbly for nesting by Piping Plovers in June 2005.

<sup>ii</sup> Quicks Hole Beach and Canapitsit on Nashawena Island were censused on June 13, 2008. Present at Quicks Hole were 2, 4-egg nests, a third pair with 3 approximately 2 week-old chicks, and an apparent fourth pair engaged in courtship and territorial behavior with 2 or 3 other adult plovers that were suspected to be a combination of at least 1 adult from adjacent pairs and at least 1 unpaired male. No plovers were observed at Canapitsit.

<sup>jj</sup> No Piping Plovers were observed during a survey of the following sites on Cuttyhunk Island on June 6, 2008: Barge Beach, Copicut Beach (the north side of the harbor entrance, across the channel from Barge Beach), the bathing beach west of the town harbor, and the beach on the east side of the West Ponds inlet.

<sup>kk</sup> At Sylvia State Beach, pair #3 was observed between April 19 and June 7, but no nest was found. We believe this pair moved north to Harthaven, where it was first detected with a 3-egg clutch on June 17. This pair was not observed at Harthaven during the *Index Count* period (June 1-9). It is included in *Total Count* and *No. pairs with fledge data* for both sites, but is tallied only once in state totals. Also at Sylvia State Beach, 2 plovers were seen together south of the Big Bridge on both the ocean and pond sides between May 16-24, but were not tallied as a pair because they were not determined to be present at this site for at least 2 weeks.

<sup>ll</sup> This site also includes the Lewis property and Long Point Wildlife Refuge.

<sup>mm</sup> Coskata-West Beach refers to the beach along the Nantucket Sound side of Coskata, from the south end of The Galls south and west to the boundary of Coatue. This is the same area that was referenced as Coskata-North Beach in 1993 and as part of The Galls in 1991 and 1992. Census data for Great Point, The Galls, and Coskata-West Beach were not reported separately in 1996 or 1997.

<sup>nn</sup> Coskata-East Beach refers to the beach along the eastern (Atlantic) side of Coskata, including the vicinity of the former washover at The Glades. Coskata Inlet is the inlet from Nantucket Harbor into Coskata Pond.

<sup>oo</sup> Wauwinet on Nantucket was monitored only once before June 8, on April 27. On June 8, one nest and two other territorial pairs were present. Only 2 pairs were observed in subsequent visits, but tracks and scrapes in the vicinity of the third pair were so prevalent on June 8 that it is possible that this pair had nested unsuccessfully, or at least been present, prior to June 8. A third pair was exhibiting courtship behavior on June 8, but was not seen thereafter.

<sup>pp</sup> Low Beach / Tom Nevers is the length of beach on the southeastern shore of Nantucket that extends from Siasconset south and west and includes the beach in front of Tom Nevers Head.

<sup>qq</sup> Smith Point, Nantucket, breached at its base in mid-April 2007 and became Esther Island again.

<sup>rr</sup> The *Unadjusted Total Count* is the sum of the *Total Counts* reported for each site.

<sup>ss</sup> The *Unadjusted total number of pairs with fledge data* is the sum of the *Number of pairs with fledge data* reported for each site.

<sup>tt</sup> The *Adjusted Total Count* is the average of the *Index Count* and the *Unadjusted Total Count*, rounded to the nearest whole number of pairs.

<sup>uu</sup> The *Adjusted total number of pairs with fledge data* is calculated by multiplying the *Unadjusted total number of pairs with fledge data* by the ratio of the *Adjusted Total Count* to the *Unadjusted Total Count*, and rounding to the nearest whole number of pairs.